Nokia Customer Care
2118 (RH-77)
Mobile Terminal

Antenna Description and Troubleshooting

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Introduction

This troubleshooting guide addresses potential failures that can affect antenna performance of the mobile terminal, and discusses methods for correction of these failures.

Internal Antenna is Missing

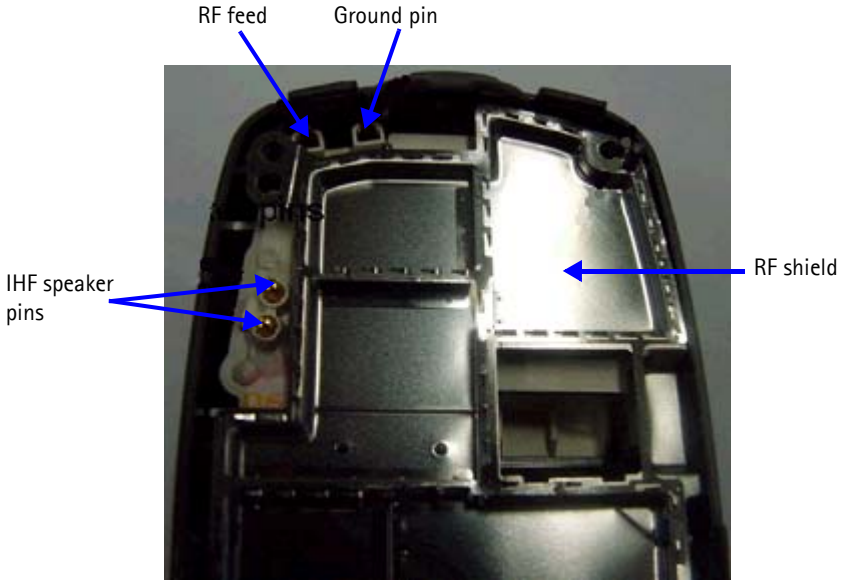

Figure 1: Chassis assembly

If no internal antenna is installed, the antenna gain is degraded by more than 25 dB.

- If the internal antenna is missing, install a new one.
- If the radiator looks obviously damaged, replace the internal antenna.

Damaged RF Feed Pin or Ground Pin

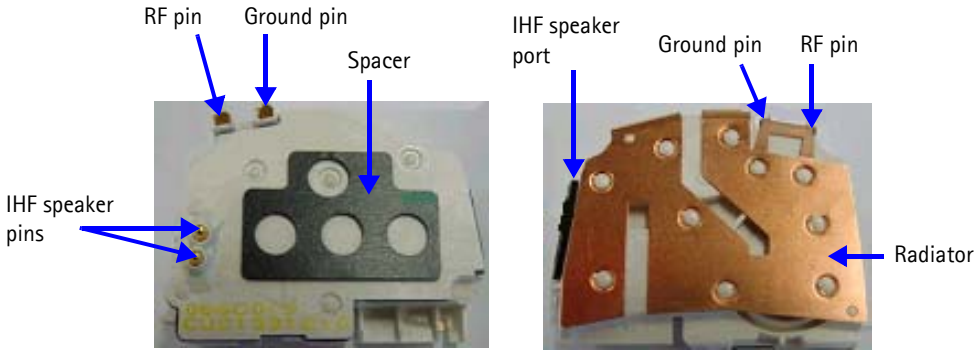

Figure 2: Top (left) and bottom (right) views of the 2118 (RH-77) internal antenna

If the RF feed does not touch the PWB, then the antenna gain will degrade by more than 25dB. If the ground pin does not touch the PWB, then the antenna gain may degrade from 5—10 dB.

Replace the internal antenna if any of the following situations apply:

- Either the RF feed pin or ground pin are broken or bent such that either pin will not touch the PWB

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- The springs for the RF or ground pin appear damaged
- The slot in the radiator has a significantly different shape
- Obvious damage to the radiator (e.g., dents, corrosion)
- The pin is stuck or has excessive friction in the plastic tube/guiding feature resulting in the spring not working properly
- Either of the IHF speaker pins is damaged or if the IHF speaker is nonfunctioning

Wrong Internal Antenna is Installed

Figure 3: Top views of the 3100 (RH-19) (left) and 2118 (RH-77) (right) antennas

The 2118 and 3100 antennas are similar in appearance. The important visual difference in the antennas is that the slot pattern is very different. Also, the 2118 antenna is thicker than the 3100 antenna and also has a spacer on its back side.

If the wrong antenna is installed, install the correct one.

Figure 4: Bottom views of 3100 (left) and 2118 (right) antennas

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Obstructed RF Feed or Ground Pads for Internal Antenna or IHF Speaker Pads

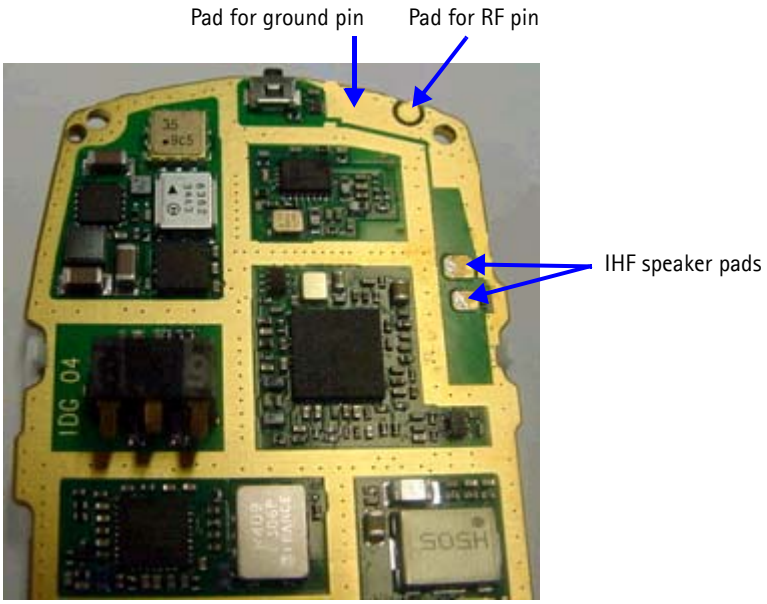

Figure 5: PWB layout of RF feed and ground pads and IHF speaker pads

If the RF feed pad is obstructed, removed, or covered, the RF feed pin will not touch the PWB and the antenna gain will degrade by more than 25 dB. If the ground pad is obstructed, removed, or covered, the ground pin will not touch the PWB and the antenna gain may degrade by about 5—10 dB.

- If corrosion is present or the pad is missing, replace the PWB and the mobile terminal.
- If either pad is obstructed or covered, clear or clean the pad.

If the Internal Hands Free (IHF) speaker pads are obstructed, removed, or covered, the IHF speaker will not produce sound.

- If corrosion is present or the pad is missing, replace the the PWB and the mobile terminal.
- If either pad is obstructed or covered, clear or clean the pad.

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Grounding of Display Frame

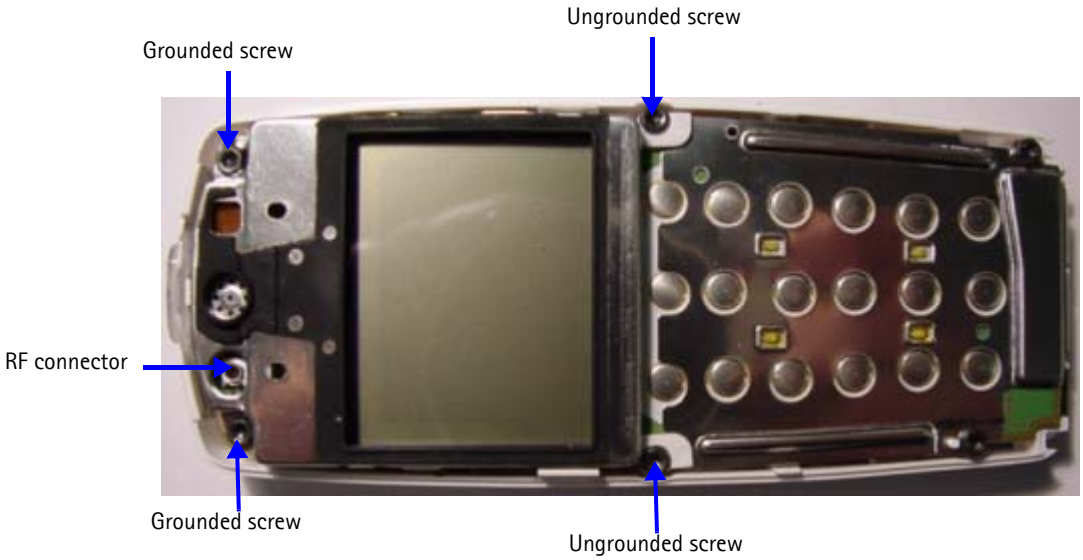

Figure 6: Display assembly

Note that the display frame is grounded to the PWB through the two top screws. The grounding of the display frame impacts the radiation performance of the mobile terminal.

- If the screws are loose, then tighten them.
- If the screw bosses are stripped, replace the chassis.
- If the screws are missing, install new ones.

The middle screws should not touch the metal in the LCD frame, the metal shield over the keypad, the PWB, or the RF shield. When driving in these screws, be sure to drive them in straight. If the screws are driven in at an angle, it is much more likely that the screws will touch the PWB or the RF shield. If the screws touch, the antenna performance could change by about 1 dB.

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RUIM Card Flap Grounding

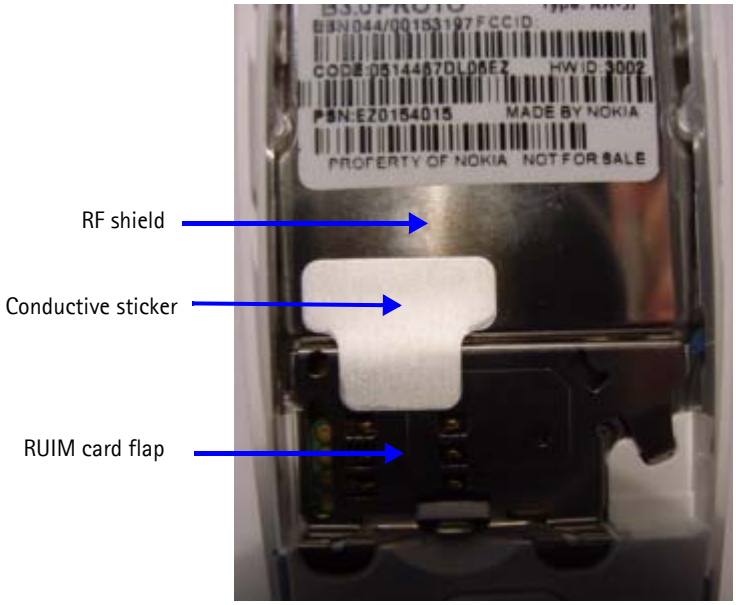

Figure 7: Conductive sticker grounding RUIM card flap to RF shield

The RUIM card flap needs to be grounded to the RF shield with a conductive sticker (see Figure 7). If the sticker is damaged or missing, then the radiated sensitivity could be reduced by 4—8 dB.

- If the conductive sticker is missing or ripped, replace the sticker.

If the RF shield needs to be disassembled from the chassis, the sticker may be damaged because the sticker needs to be removed to change the antenna module or the RUIM card flap.

- If you replace the RUIM card flap or RF shield, replace the type labels and conductive sticker.
- You may need to replace the RF shield and all the labels because the conductive sticker is located underneath other labels.

RF Connector Failure

The RF connector could fail by not connecting the RF input to the RF output of the RF connector. If this happens, the antenna gain will degrade by about 25 dB. Check for this by testing for DC conductivity between the RF input and RF output of the RF connector. Note that the DC conductivity test must be done without any cables attached to the RF connector. Because the RF connector is also a switch, the RF output is disconnected from the RF input when a cable is inserted into the RF connector. When a cable is inserted, the RF input is connected to the RF connector.

- RF input — connector to a duplexor
- RF output — connects to the antenna pad through vias
- RF connector — connects to a coaxial cable

If the RF input is not connected properly to the RF output, replace the RF connector.

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